

REMARKS

Applicants respectfully acknowledge receipt of the Final Office Action mailed December 4, 2006.

In the Final Office Action, the Examiner rejected claims 1, 10, and 13 under 35 U.S.C. § 103(a) as being unpatentable over *Arndt et al.* (U.S. Patent No. 6,469,130) in view of *Hori* (U.S. Patent No. 6,469,398) and *Minamio et al.* (U.S. Patent No. 6,900,524); and rejected claims 11 and 12 under 35 U.S.C. § 103(a) as being unpatentable over *Arndt* in view of *Hori* and *Minamio*, and further in view of *Hurt et al.* (U.S. Pub. No. 2003/0007749).

By this Amendment After Final, Applicants propose to amend claim 1. Upon entry of this Amendment, claims 1 and 10-13 will remain pending. Of these claims, claim 1 is independent. Claims 2-9 were previously canceled in the Amendment filed March 17, 2005, and claim 14 was previously canceled in the Amendment filed March 10, 2006.

The originally-filed specification, claims, abstract, and drawings fully support the amendments to claim 1. No new matter has been introduced.

Applicants traverse the rejections above and respectfully request reconsideration for at least the reasons that follow.

I. 35 U.S.C. § 103(a) REJECTION

Claims 1, 10, and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Arndt* in view of *Hori* and *Minamio*. Applicants respectfully disagree with the Examiner's arguments and conclusions and submit that independent claim 1

patentably distinguishes over *Arndt*, *Hori*, *Minamio*, and the other art of record, at least for the reasons described below.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), each of three requirements must be met. First, the reference or references, taken alone or combined, must teach or suggest each and every element recited in the claims. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references in a manner resulting in the claimed invention. Third, a reasonable expectation of success must exist. Moreover, each of the three requirements must "be found in the prior art, and not be based on applicant's disclosure." See M.P.E.P. §2143, 8th ed., February 2003.

Arndt appears to disclose a semiconductor component including a semiconductor chip 1 secured on a chip carrier part 2, and separate external connections 11 and 12, which project outside a parallelepipedal encapsulation 3. (*Arndt*, col. 2, ll. 46-50 and Figs. 1A-1C).

As admitted by the Examiner, however, "*Arndt* does not show that the soldering terminals (11 and 12) do not extend beyond an outline of the encapsulation material because the terminals are bent inward toward the encapsulation material." (*Office Action*, p. 2, line 25 - p. 3, line 1). In addition, *Arndt* fails to disclose soldering terminals provided by a base of the assembly (emphasis added).

Thus, in order to cure the deficiencies of *Arndt*, the Examiner relies on *Hori* for its asserted disclosure of "soldering terminals (11 and 12) that do not extend beyond an outline of the encapsulation material (5)." (*Id.* at p. 3, ll. 2-4).

Hori appears to disclose a semiconductor package 10 including a semiconductor chip 2 mounted on a heat spreader 6 through a solder layer 3. First and second leads 11 and 12, each formed of a conductive strip, are bonded to bump contacts 7a and 7b, respectively. (*Hori*, col. 4, ll. 49-63).

Hori, however, fails to disclose the first and second leads 11 and 12 being provided by a base of the semiconductor package 10. Instead, as illustrated in FIGs. 1B and 1C, the first and second leads 11 and 12 are individual and separate components attached to a passivation film 4 of the semiconductor package 10, with no reference to being provided by a base of the assembly (emphasis added).

As supported by Applicants' specification at page 6, paragraph 3, "[s]oldering terminals (8) to the external sub-systems, such as PCB, are provided by the base material itself...No extra mechanical forming processes are necessary to create the soldering terminals" (emphases added).

Additionally, even if *Hori* properly could be considered to disclose soldering terminals provided by a base of an assembly, which Applicants do not necessarily concede, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine *Arndt* and *Hori* in a manner that would result in the claimed invention. Rather, the Examiner has used impermissible hindsight as motivation to combine *Arndt* and *Hori*. For example, *Hori* and *Arndt* relate to different fields and different areas of technology in the semiconductor industry. *Hori* discloses a generic semiconductor package with a vertical type MOS transistor, whereas *Arndt* discloses an optoelectronic semiconductor package. Optoelectronic semiconductor components are unique in that they require a

transparent “window” for light transmission to or from the component. Accordingly, it would not have been obvious to one of ordinary skill art, i.e., in the field of optoelectronic components, to combine the generic features of *Hori* with the features of *Arndt*, resulting in the Applicants’ claimed optoelectronic component.

Moreover, as further admitted by the Examiner, “Arndt and Hori show all of the elements of the claims except the grooves and wings in the base material to enhance anchorage.” (*Office Action*, p. 3, ll. 8-9). Accordingly, in order to cure the deficiencies of *Arndt* and *Hori*, the Examiner relies on *Minamio* and alleges that “*Minamio* shows (fig. 1) grooves (19) and wings (next to grooves) formed in the metal frame/base member (13).” (*Id.* at p. 3, ll. 10-11). Such teaching, even if present in *Minamio*, however, fails to teach or suggest the claimed “soldering terminals provided by [a] base are part of [an] electrically conductive frame and are exposed at bottom and side portions of [a] component...[and] said soldering terminals do not extend beyond an outline of said encapsulation material” (emphases added).

Accordingly, with respect to independent claim 1, *Arndt*, *Hori*, and *Minamio* fail to teach or suggest Applicants’ claimed combination, including, *inter alia*:

“soldering terminals provided by [a] base are part of [an] electrically conductive frame and are exposed at bottom and side portions of [a] component...[and] said soldering terminals do not extend beyond an outline of said encapsulation material” (emphasis added).

The Examiner has therefore not met the essential criteria for establishing a *prima facie* case of obviousness. Accordingly, independent claim 1 is patentable over *Arndt*, *Hori*, and *Minamio*. Applicants therefore request that the rejection of claim 1 under 35 U.S.C. § 103(a) be withdrawn and claim 1 be allowed.

Moreover, claims 10 and 13 are in condition for allowance at least due to their dependence from independent claim 1. In addition, at least some of the dependent claims may recite unique combinations that are neither disclosed nor suggested by the cited art, and therefore some also are separately patentable.

Applicants respectfully traverse the Examiner's rejection of claims 11 and 12 under 35 U.S.C. § 103(a) as being unpatentable over *Arndt* in view of *Hori* and *Minamio*, and further in view of *Hurt*. The shortcomings of *Arndt*, *Hori*, and *Minamio* are discussed above.

With respect to *Hurt*, the Examiner alleges that "*Hurt et al.* shows (fig. 5) that a lens structure is used in an optoelectronic package to launch radiation into an external fiber or focus received light into the die [0042 and 0043]." (*Office Action*, p. 4, ll. 7-9). Such teaching, even if present in *Hurt*, however, fails to teach or suggest the claimed "soldering terminals provided by [a] base are part of [an] electrically conductive frame and are exposed at bottom and side portions of [a] component...[and] said soldering terminals do not extend beyond an outline of said encapsulation material" (emphases added). Thus, *Hurt* also fails to overcome the above noted shortcomings of *Arndt*, *Hori*, and *Minamio*, and claims 11 and 12 are allowable at least due to their dependence from independent claim 1.

II. CONCLUSION

Applicants respectfully request that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 1 and 10-13 in condition for allowance.

Applicants submit that the proposed amendments of claim 1 do not raise new issues or

necessitate the undertaking of any additional search of the art by the Examiner, since all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

Furthermore, Applicants respectfully point out that the final action by the Examiner presented some new arguments as to the application of the art against Applicants' invention. It is respectfully submitted that the entering of the Amendment would allow the Applicants to reply to the final rejections and place the application in condition for allowance.

Finally, Applicants submit that the entry of the amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.

In view of the foregoing remarks, Applicants submit that this claimed invention, as amended, is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicants therefore request the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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